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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/286,160 04/05/99 BRUNING

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EXAMINER

TM02/0910

WILLIAM J KUBIDA  
HOLLAND & HART LLP  
POST OFFICE BOX 8749  
555 SEVENTEENTH STREET SUITE 3200  
DENVER CO 80201-8749

MCLEAN, K

ART UNIT

PAPER NUMBER

2185

DATE MAILED:

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

# Office Action Summary

Application No.  
09/286,160

Applicant(s)  
BRUNING

Examiner  
Kimberly McLean

Art Unit  
2185



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Jun 19, 2001
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 20) ☐ Other: \_\_\_\_\_

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### DETAILED ACTION

1. The enclosed detailed action is in response to the Amendment on June 19, 2001.

#### *Claim Rejections - 35 U.S.C. § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8,13-15 and 17-20 are rejected under 35 U.S.C. 103(a) as being anticipated by Massiglia, The RAID Book in view of Filgate (USPN: 6,178,521).

Regarding claims 1, 3-4, 6, 13-15 and 17-19, Massiglia discloses a computer (host computer (inherent); Page 6); a plurality of disks (Page 151, Figure 73; Page 153, Figure 74); a back-end controller (RAID engine) coupled to the disks via ports (plurality of busses) which are each coupled to one and only one of the disks for organizing and presenting the disks as a plurality of redundant arrays of disks (Page 151, the lower Array Management Function; Page 153 the mirroring Array Management Function); a front-end controller (stripe engine) coupled to the back-end controller for striping the redundant arrays of disks and presenting the striped array as a virtual volume (Page 151, upper Array Management Function; Page 153, striping Array Management Function). Massiglia does not explicitly disclose a plurality of back-end controllers. However, Filgate discloses the concept of plural back-end controllers to provide a disaster

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tolerant system (Figure 3, References 340 and 380; C 3, L 14-33; C 4, L 36-48; C 6, L 8-35).

One of ordinary skill in the art would have recognized the benefits of Filgate's teachings and would have been motivated to use such teachings with the teachings of Massiglia for the desirable purpose of reliability.

Regarding claim 2, Massiglia discloses the limitations cited above, however, Massiglia does not explicitly disclose one or more of the plurality of disks as spare disks. Official notice is taken that it is well known in the art to include spare disk in a RAID system to replace a failed disk. This feature allows the RAID system to maintain its level of performance and reliability by replacing the failed disk with a new disk so that mirroring and striping may still occur. Therefore, it would have been obvious to one of ordinary skill in the art to include spare disk with Massiglia's teachings for the desirable purpose of improved performance and reliability.

Regarding claims 5, 7, 16 and 20, Massiglia discloses the features cited above in claims 4, 6, 15 and 19, however, Massiglia does not explicitly disclose the RAID engine presenting the plurality of disks as a plurality of RAID-5 sets. Massiglia does teach that a RAID 5 provides a simple mechanism for providing data protection bit-by-bit parity (Page 102, 1st Paragraph). This feature provides reliability. One of ordinary skill in the art would have recognized the benefits provided by a RAID 5 system and would have been motivated to use a RAID 5 system with the teachings

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of Massiglia (with respect to the limitations cited above) for the desirable purpose of increased reliability.

Regarding claim 8, Massiglia discloses a back-end controller configured to organize and present X N-member RAID sets, and having N busses (ports) capable of supporting X + 1 disks (Page 151, the lower Array Management Function; Page 153 the mirroring Array Management Function); a plurality of groups of X+1 disks, each group being coupled to one of the back-end controller busses (Page 151, Figure 73; Page 153, Figure 74); and a local front-end controller coupled to the back-end controllers for receiving the RAID sets as members, striping the member RAID sets, and presenting the striped RAID sets as a virtual volume (Page 151, upper Array Management Function; Page 153, striping Array Management Function). Massiglia does not explicitly disclose a plurality of back-end controllers. However, Filgate discloses the concept of plural back-end controllers to provide a disaster tolerant system (Figure 3, References 340 and 380; C 3, L 14-33; C 4, L 36-48; C 6, L 8-35). One of ordinary skill in the art would have recognized the benefits of Filgate's teachings and would have been motivated to use such teachings with the teachings of Massiglia for the desirable purpose of reliability.

4. Claims 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Massiglia, The RAID Book in view of Filgate (USPN: 6,178,521) as applied to claim 8 and further in view of Matoba (USPN: 5,611,069).

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Regarding claims 9 and 11-12, Matoba discloses a controller which performs mirroring and striping on RAID sets (C 11, L 29-65) which provides improved performance. In Massiglia's teachings mirroring is performed via a lower Array Management Function and striping is performed via an upper Array Management Function. In the event of a failure of the lower Array Management Function, Massiglia's system will no longer provide mirrored data. Therefore, it would have been obvious to one of ordinary skill in the art to provide a front end controller which performs data mirroring and striping for the desirable purpose of improved performance and reliability. Additionally with regard to claims 11 and 12, Filgate teaches the concept of local and remote controllers for increased reliability. It would have been obvious to one of ordinary skill in the art to use redundant (local/remote) front-end controllers in the system taught by Massiglia for the desirable purpose of increased reliability.

Regarding claim 10, Filgate teaches the concept of providing multiple controllers (primary local and primary remote) for improved performance and reliability (Figure 3, C 6, L 8-35). For the same reasons it is desirable to have a primary local and primary remote controller, it would be desirable to provide additional redundant controllers (redundant local, redundant remote, cloning) for increased reliability. It would have been obvious to one of ordinary skill in the art to provide redundant local, redundant remote and cloning controllers to the teachings of Massiglia for the desirable purpose of increased reliability.

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***Response to Arguments***

5. Applicant's arguments filed have been fully considered but they are not persuasive. The changes made to 35 U.S.C. 103 (c ) by the American Inventors Protection Act of 1999 (AIPA) applies to all applications **filed on or after November 29, 1999**.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly McLean whose telephone number is (703) 308-9592 (e-mail

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address: Kimberly.McLean2@uspto.gov). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Do Yoo, can be reached on (703) 308-4908.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Any formal response to this action intended for entry should be mailed to Commissioner of Patents and Trademarks, Washington, D.C. 20231 or faxed to (703) 305-9051 and labeled "FORMAL" or "OFFICIAL". Any informal or draft communication should be faxed to (703) 308-6306 and labeled "INFORMAL" or "UNOFFICIAL" or "DRAFT" or "PROPOSED" and followed by a phone call to the Examiner at the above number. Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

KNM

KNM

September 6, 2001

*Do Hyun Yoo*  
DO HYUN YOO  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100